

ANDREWS SPINAL SURGERY TABLE
MODEL 5838 & 5838 I

MAINTENANCE and REPAIR MANUAL



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IMPORTANT NOTICES

CAUTION: To ensure safe operation of the equipment, please READ THESE INSTRUCTIONS COMPLETELY and keep this manual readily available for future reference.

Carefully observe and comply with all warnings, cautions and instructions placed on the equipment or described in this manual.

In this manual, the  **WARNING** symbol is intended to alert the user to the presence of important operation, maintenance, or safety instructions.

Dans ce manuel, le symbole  **AVERTISSANT** est projeté d'alerter l'utilisateur à la présence d'opération importante, l'entretien, ou les instructions de sûreté.

Classification and Table Rating

The 5838 table is considered Class I Exempt and has a rating of IPX-0.

PROTECTION AGAINST ELECTRICAL SHOCK HAZARD:

This symbol  indicates this equipment is an applied part TYPE B and is generally suitable for applications involving external or internal contact with the patient, excluding the heart. The patient circuit is connected to protective earth and this equipment should be connected only to outlets with a protective earth ground.

LA PROTECTION CONTRE LE DANGER DE CHOC ELECTRIQUE:

Ce symbole  indique cet équipement est un appliqué partie TYPE B et est pour applications impliquant externe ou interne contact avec le malade, exclure le coeur. Le est connecté à protectif terre et ce devrait être seulement connecté à sorties avec un protectif terre. Cet équipement a un IPX-4 évaluant.

This device is to be used by trained personnel only.

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1.0 INTRODUCTION

1.1 General Description

This manual describes the use, maintenance, and repair of the Andrews Spinal Surgery Table. It is the primary component of the system designed to support patients for a variety of surgical procedures. The Andrews Spinal Surgery Table is electrically controlled and hydraulically operated. The Andrews Spinal Surgery Table is a multi-position spinal surgery table with the capability for intra-operative radiographic imaging. The input power required is 120~VAC at 60 Hz or 230~VAC at 50 Hz and is Type B, IPX-0 Rated.

The table height can be adjusted from 32 to 42 inches. Width, at its base, is 29 inches. Length, when collapsed, 57 inches and 82 inches when fully extended. It can be tilted right and left up to 10° from horizontal. The foot end can be raised or lowered. Patient weight is limited to 350 pounds. The seat end of the table is considered the Foot End of the table. The control panel end is at the Head End of the table. Right and left are viewed facing from the Foot End of the table, therefore right is the patient's right and left is the patient's left (See figure 1)

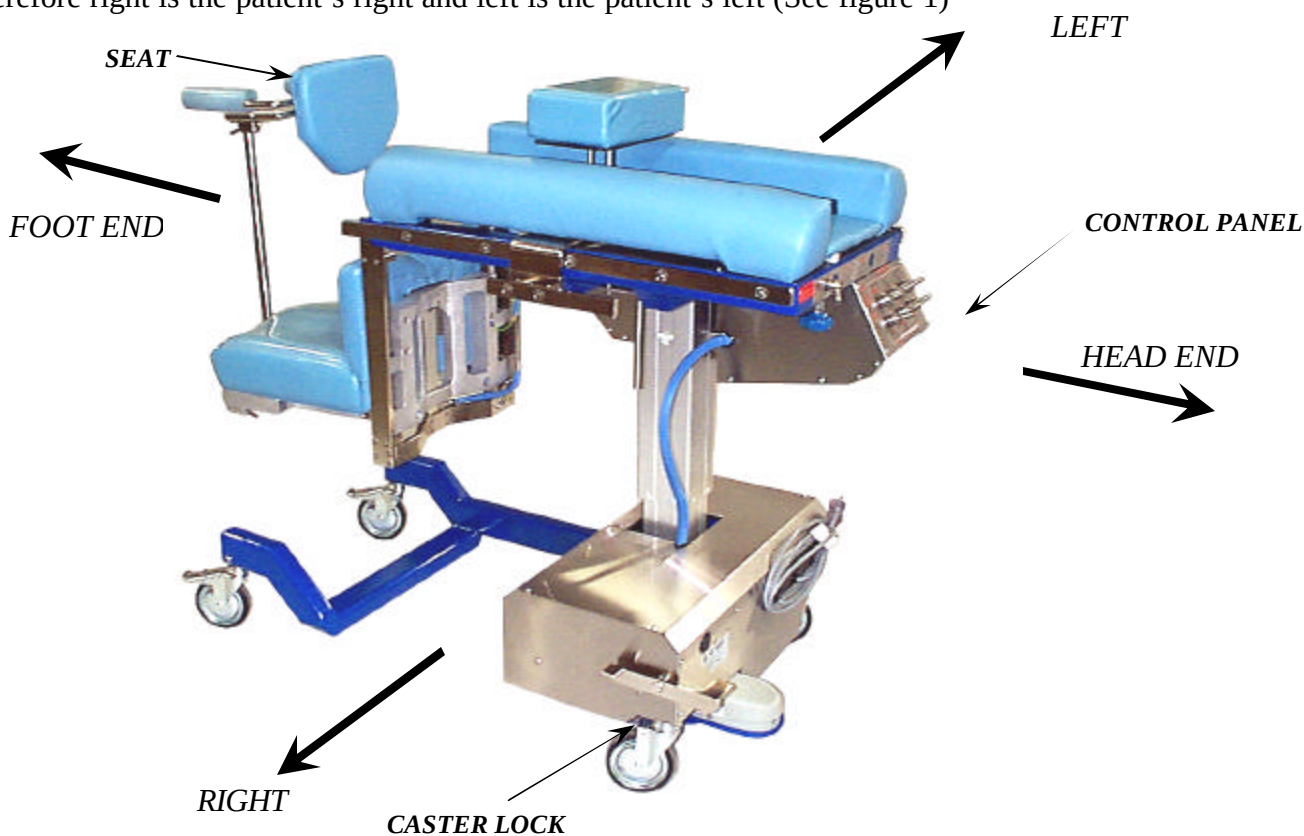


Figure 1

1.2 Specifications

- | | |
|---------------------------|--|
| • Maximum patient weight: | Table Top specific but not to exceed 350 lbs |
| • Height Range | 32 to 42 inches |
| • Powered Tilt Range | 10° ±3° |
| • Power Input | 120 VAC at 60 Hz or 230 VAC at 50 Hz |
| • Overall Length | 120 inches |
| • Retracted Length | 57 inches |
| • Extended Length | 82 inches |
| • Width | 29 inches |
| • Duty Cycle | 10% or 6 minutes continuously per hour |

1.3 Shipping

The Table Base must be shipped in a manner that prevents damage to its structural elements, caster wheels, electronics, and operating controls. Contact with solid objects in the environment must be prevented during shipment and storage, except at the four Casters. Banding for lateral constraint is to be limited to the base structure. It is not necessary to crate the Table Base if it is assured that no impact with foreign solid objects will be made during transit. The Table Base is to be shipped in an environment within the following limits:

- Ambient temperature -20° C to +50° C (32°F & 120°F)
- Relative humidity from 10% to 100%, including condensation
- Atmospheric pressure from 50 to 110 kPa

1.4 Storage

When not in use, store in a clean, dry environment with temperature between 32°F and 120°F.

2.0 CONTROLS IDENTIFICATION

2.1 Major Component Identification

The Table Base is designed to provide patient support free of any obstructions that might compete for space with the C-Arm. The major components of the Andrews Table are identified in the following figures (see figure 3).

2.2 Base Orientation

The control end of the Base is considered the Head End, and the opposite end is the Foot End. The right side of the Base is the side to the operators' right when standing at the Head End looking toward the Foot End Base. The general nomenclature and orientation of the Table is shown in Figure 1. Refer to the appropriate User Guide supplied with each Table for more detailed information about the use.

2.3 Model Number and Serial Number

The Model Number and Serial Number are printed on the Identification Label located at the Head End Base. This label is located to the right of the ON/OFF switch as shown below.

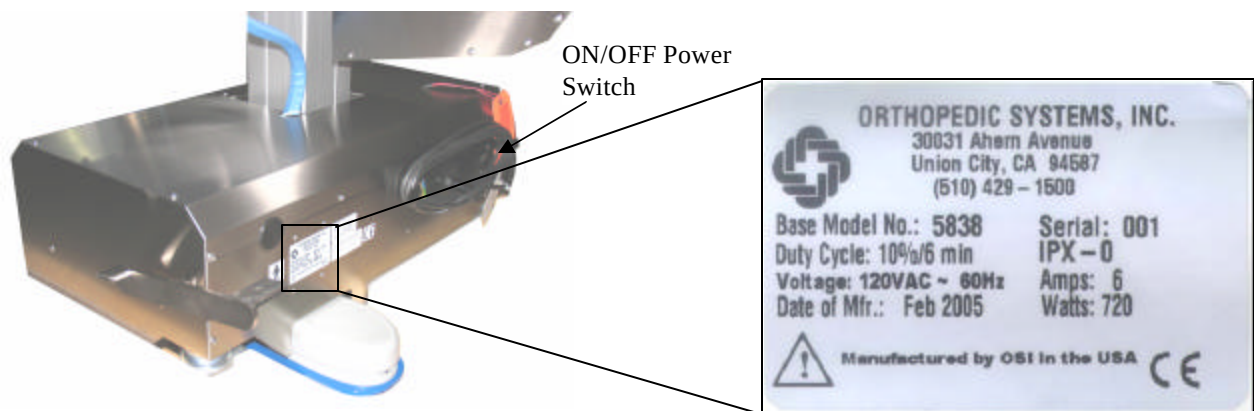


Figure 2

Serial Number Label

3.0 INSPECTION

3.1 Acceptance & Transfer

Upon receipt of your Andrews Table, remove any protective wrapping or packaging. Visually inspect all surfaces for freight damage. Check each caster for proper rolling operation.

***NOTE:** Any freight damage must be reported to the freight carrier immediately upon delivery. It is the responsibility of the recipient to make freight damage claims.*

1. Verify the Andrews Table Model/Serial Number Identification Label. The label is located at the Pedestal End of the base (See Figure 2.) to confirm the serial number and the input power requirements.
2. Place the Andrews Table in an area with at least 4 feet of clearance on all sides.
3. Perform Pre-Operational function check; see Section 4.0.

3.2 Preoperative

1. Perform Pre-Operational function check; see Section 4.0.

3.3 Postoperative

1. Perform Pre-Operational function check; see Section 4.0.

3.4 Annually

1. Perform Pre-Operational function check; see Section 4.0. Thoroughly clean the table as described in CLEANING, Section 7.0. Pay special attention to the cleanliness of the controls as excessive soil could affect function.
2. Inspect the power cord and integrity of all wiring for cuts in the insulation or damage.
3. Remove all dust and debris from pump motor air intake.
4. Check for fluid leaks.
5. Check to see that all fasteners and hoses are secure and tight.
6. Check the operation and security of the Brake Casters with and without load.
7. Check security of all side rails and components.
8. Lubricate all drop handles with instrument oil.
9. Perform complete Preventative Maintenance Checklist. Contact OSI Technical Service for a complete Preventative Maintenance Checklist.

4.0 PRE-OPERATIONAL FUNCTION CHECK

After reading the Basic Operation Section, perform all the steps in this procedure. For a complete definition of reference terms used, please refer to the GLOSSARY OF TERMS Section.

1. Plug the power cord into a “hospital grade” power outlet and flip the main “ON/OFF” Power Switch to "ON". Verify the switch illuminates; this indicates power is applied to the table.
2. In succession, press the foot pedal and turn one of the six levers on the control panel to confirm the operation of the following functions:
 - 2.1. Trendelenberg (TRENDEL/REV TRENDDEL)
 - 2.2. Torso Lift (UP/DOWN)
 - 2.3. Tibial Support (UP/DOWN)
 - 2.4. Foot End (UP/DOWN)
 - 2.5. Table Height (UP/DOWN)
 - 2.6. Lateral Tilt (PT'S RIGHT/PT'S LEFT)
 - 2.7. Press the Leg Restraint Release Button and move the leg restraints in and out.
 - 2.8. Release the Seat Release Button and move the seat up and down.

Report any malfunction to your OSI representative immediately.

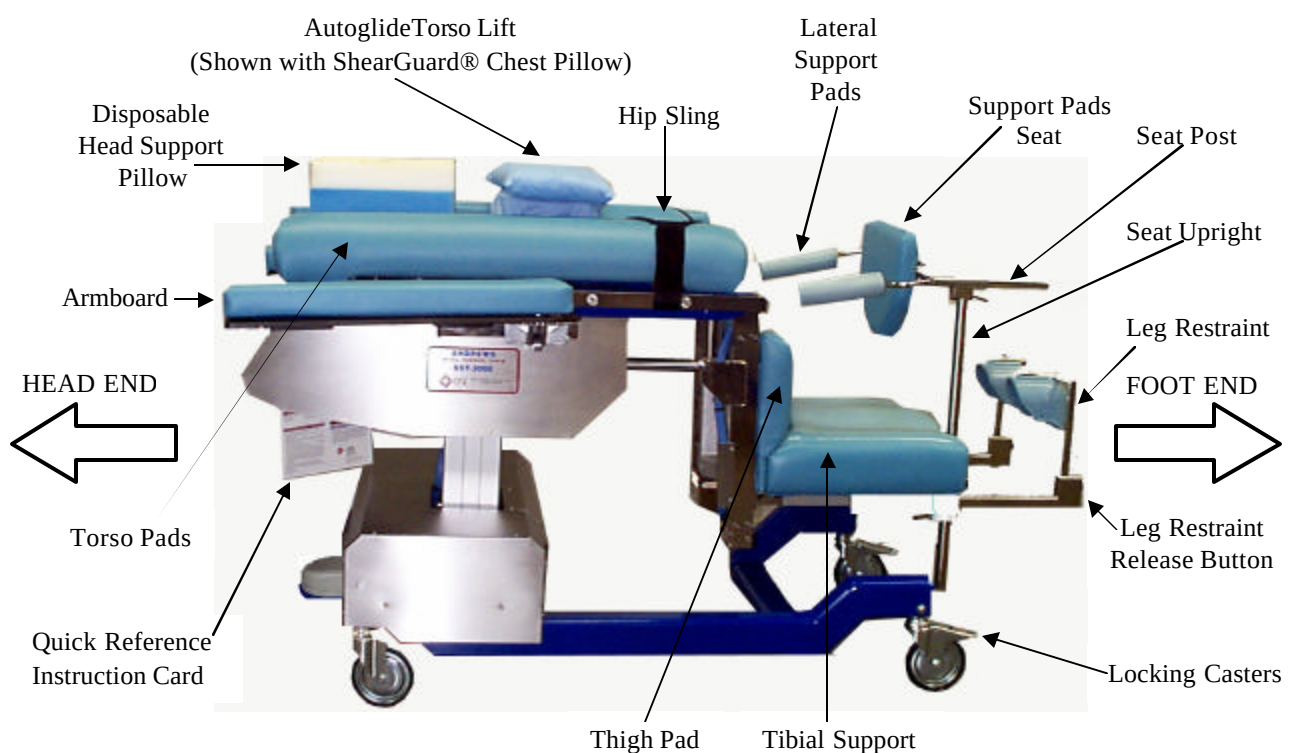


Figure 3: Components of the Andrews Table (Side View)

5.0 BASIC OPERATION

The Andrews Table is operated with AC voltage. Plug the AC Power Cord into the proper AC receptacle depending on the voltage requirements of the Andrews Table. Refer to the label at the Head End Base for input voltage requirements. Turn the ON/OFF Power Switch to "ON". A green, "Power On" light, next to the switch indicates that the power is "ON". The ON/OFF Power Switch is a combination power switch/circuit breaker. To reset the circuit breaker flip the ON/OFF Power Switch "OFF" then "ON".

NOTE: *The table must be connected to a proper earth ground before use.*

5.1 Casters

Each Base is equipped with three (3) Locking Casters and one (1) Steer Caster. The Steer Caster functions to allow the Table to roll along a straight path when pushed from the Head End. The Steer Caster is located on the right side of the Head End. To lock the Table Base securely in place, it is necessary to engage the Lock.

To engage a locking Caster, step on the Lock Tab until you hear an audible click, the Tab will remain in the down or locked position. To unlock the Caster, push the Unlock Button. When the Unlock Button is pressed, the Tab will click back to the original unlocked position.

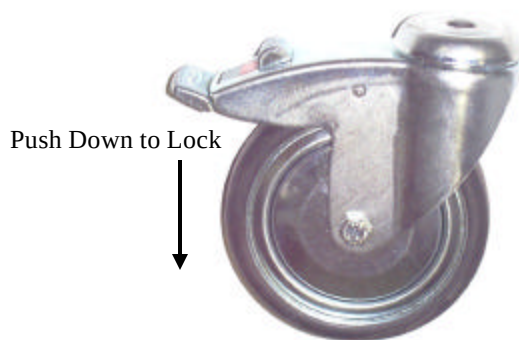


Figure 4 - Unlocked Caster

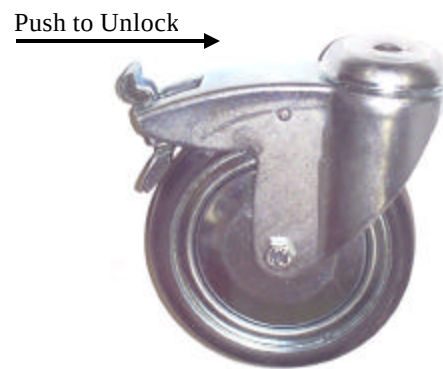


Figure 5 - Locked Caster

5.2 Control Operation

The Andrews Table is controlled by levers that actuate hydraulic cylinders. To actuate the table, depress the foot pedal and rotate the required lever to move the desired function. Each lever is defined and moves as follows: Trendel/Rev Trendel, Torso Lift Up/Down, Tibial Support Up/Down, Foot End Up/Down, Table Height Up/Down and Lateral Tilt Patient Left/Right

Before installing the Iliac Crest supports, turn handle “A” counterclockwise until Pad “B” is in its lowered position.

5.3 Table Controls

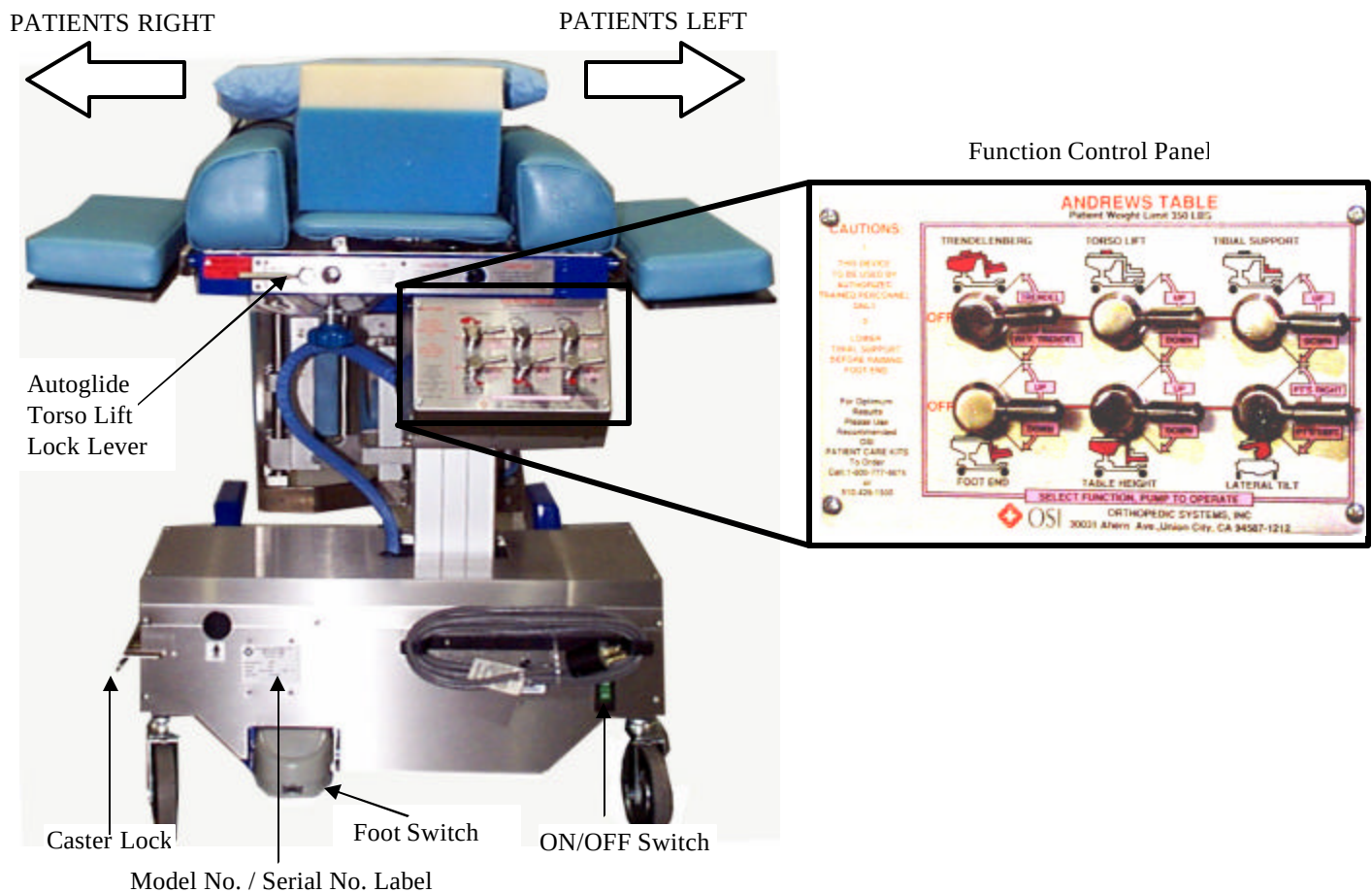


Figure 6: Andrews Table Function Controls (Head End View)

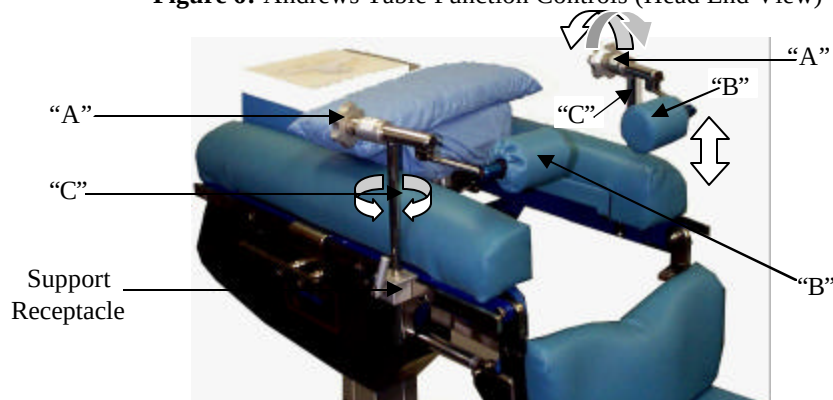


Figure 7: Iliac Crest Supports

6.0 CLEANING AND MAINTENANCE

6.1 Cleaning and Disinfecting

NOTE: The Table Base is not sealed, therefore:

- *Never pour any liquid directly onto the table.*
- *Never allow any liquid to enter the extensile joint of the columns.*
- *Never subject the Andrews Table to an equipment washing machine.*

Failure to thoroughly dry any surface after cleaning and disinfecting may result in rust. It is important to dry the Base to prevent rusting. Rust formation can prematurely shorten the useful life expectancy of the Andrews Table.

USE OF IODOPHORS WILL CAUSE STAINING.

Table Exterior:

- Exterior surface should be regularly wiped clean with a mild detergent solution and wiped dry with a soft lint-free cloth.
- Care should be taken to avoid exposing the table to excessive moisture. Flooding, fogging or steam cleaning is not recommended and will void any warranty.
- Blood or other fluids, etc., if allowed to remain on the table for a long period of time, will require special cleaning to remove. A 5% acetic acid solution or white vinegar and water solution is especially good for this purpose.
- Cleaning with a good commercial cleaning compound, such as Stainless Steel Magic or Acme White Finish, and then buffing the surface by hand can correct staining and discoloration of plated or stainless steel surfaces.
- To disinfect exterior surface use a quaternary ammonium or similar type disinfectant compound according to manufacturer's directions for use. Wipe dry with a soft lint-free cloth.
- Casters should be cleaned and disinfected in the same manner as table exterior.

6.2 Lubrication

Table Exterior:

Following a thorough cleaning and decontamination of the table, silicone lubricant spray may be used on most of the exposed inner head and foot columns and inner retractable beam. No other lubrication is necessary.

Table Interior:

All of the internal moving parts of the Andrews Table receives factory lubrication, which under normal use, provides lubrication for the life of the equipment.

6.3 Preventative Maintenance

Contact OSI Technical Service for a complete Preventative Maintenance Checklist.

7.0 THE ELECTRICAL SYSTEM

7.1 Description

The Andrews Table uses an external AC power source for operation. The input power required is 120~VAC at 60 Hz or 230~VAC at 50 Hz and is IPX-0 Rated. The electrical system consists of a power cord, circuit breaker; electric motor/pump, capacitor, power filter, and foot operated switch (see Electrical System Schematic). Electrical is supplied to the table through the power cord. The circuit breaker located on the front panel controls electrical power to the table. When the electric cord is plugged into an appropriate power source and the circuit breaker is in the “on” position, the switch will illuminate. The motor/pump is controlled by the foot switch. When the foot switch is depressed, the electrical circuit is completed. Current will flow, charging the capacitor, and provide electrical power to run the motor/pump. Release of the foot switch will stop the motor/pump.

7.2 Power Cord

The table is equipped with a standard EIC power cord with the appropriate 120 VAC hospital grade connector (230 VAC versions do not include the power connector).

7.3 ON/OFF Power/Circuit-Breaker Switch

An ON/OFF Main Power-switch is mounted at the head end of the base. This switch also serves as a circuit breaker. In the event of an overload condition, this switch will trip off. To reset, push to the “OFF” position and then the “ON” position.

NOTE: *Determine the source of the overload prior to resetting this switch.*

8.0 TROUBLESHOOTING

8.1 Electrical System

Electrical power is supplied through the power cord. Be certain that the Power Cord is plugged into a live electrical outlet and the Power Switch is switched ON. A green "Power On" light illuminates indicates this. "See Electrical Schematic for further details".



WARNING

Before removing any sheet metal covers the table must be turned off and unplugged. Dangerous high voltage may be present in the circuitry under the covers. Only trained technicians should perform this task.



AVERTISSANT

Enlever de Befor n'importe quel métal de drap couvre la table doit être tournée de et débranché. Dangereux à haute tension peut être actuel dans le circuitry sous les couvertures. Technitions seulement entraîné doit exécuter cette tâche.

SERVICE OF ELECTRICAL SYSTEM

CIRCUIT BREAKER

A circuit breaker (10 Amp - 120~VAC, 3 Amp - 230~VAC) is positioned on the front panel. A short circuit will cause the breaker switch to trip. The switch can be reset by pushing switch to the off position and then turning it on again.

The circuit breaker switch also serves as a pilot light indicating the power to the table is supplied.

MOTOR/PUMP AND CAPACITOR

The electric motor/pump, capacitor and relay (relay for 120VAC only) are located under the base bottom cover. All electrical connections are accessible with the base bottom cover removed.

FOOT SWITCH

The foot switch is located on the bottom right side of the front panel and controls the motor/pump. The foot switch is a SPDT monetary waterproof switch rated at 20 Amps 25-250 VAC. The foot switch is only activated when it is pressed down and held in that position. When the switch is released, the motor/pump is turned off.

SERVICING THE ELECTRICAL SYSTEM

NOTE: Unplug the power cord from the wall before removing the access cover.

Access to the wiring is achieved by first removing the top base cover.

230VAC

To diagnose possible line power problems, carefully plug in the power cord. With the power switch on, voltage can be measured with an AC voltmeter at several locations. The circuit breaker power output should be measured between terminals J3-P3 and J4-P4 of the circuit breaker. It should be between 200 VAC and 240 VAC. Depress the foot switch and hold it down. Check voltage on LOAD side of Power Line Filter (OSI Part Number: NV0542) at J8 and J9. It should be between 200 VAC and 240 VAC. "Refer to the following electrical system schematic"

120VAC

To diagnose possible line power problems, carefully plug in the power cord. With the power switch on, voltage can be measured with an AC voltmeter at several locations. The circuit breaker power output should be measured between terminals J3-P3 and J4-P4 of the circuit breaker. It should be between 90~VAC and 130~VAC. Depress the foot switch and hold it down. Check voltage on *LOAD* side of Power Line Filter (OSI Part Number: NV0542) at J8 and J9. It should be for the 120VAC version (90~VAC to 130~VAC) or 230~VAC version (200 VAC to 240 VAC). "Refer to the following electrical system schematic".

Powered Andrews Maintenance and Repair Manual



Troubleshooting Chart

Following is a list of several possible problem scenarios for an Andrews Table. This list is provided for your convenience and it is expected that users will rarely, if ever experience any of these problems.

PROBLEM	POSSIBLE CAUSE	REMEDY
No Hydraulic Function	No Power to Table	Plug in Power Cord.
	Circuit Breaker	Reset Breaker, Turn on.
	Electrical Failure	Troubleshoot per Section IV. Servicing of Electrical System
	Hydraulic Fluid Low	Service Hydraulic System
	Pump Inoperative	Test Pump
	Filter Clogged	Test Filter
	Hoses Pinched or Clogged	Check Pump Supply and Output Lines
	Pump Linkage Disconnected	Check Linkage
One Cylinder Inoperative in Both Direction	Hoses Pinched or Clogged	Check Retract and Extend Lines
	Binding Cylinders	Test Cylinder
	Binding Surfaces	Check Pivot and Sliding Components for Binding
	Selector Valve Inoperative	Call for Service
	Internal Leakage	Call for Service
One Cylinder Inoperative in One Direction Only	Binding Surfaces	Check for Binding Surfaces and Lubricate
	Hose Loose	Find Loose Hose and Tighten
Table Drifts	Air in System	Cycle Cylinder through its full Range of Motion
	Check Valve Out of Adjustment	Adjust Check Valve
	Internal Leakage	Call for Service
	Clogged Pump or Filter	Test Pump and Filter
Autoglide Torso Lift Will Not Lock	Lock Out of Adjustment	Adjust Lock
	Broken Springs	Replace Springs

LACK OF HYDRAULIC FLUID

Hydraulic fluid must be periodically replenished. The pump, piston seals and cylinders are lubricated every time the piston is extended by oil clinging to the piston rod. This, in addition to normal acceptable seepage from connectors will (over a period of time) deplete the hydraulic oil in the reservoir. The lack of hydraulic fluid can be a normal occurrence. Service the hydraulic system as per servicing instructions.

CRACKED FITTINGS

The primary cause of cracked fitting is over tightening. Rubbing O-Rings and metal-to-metal contact are utilized to seal the hydraulic against excessive external leakage and introduction of contamination. A snug (Torque of 10 ft lbs.) fit is all that is required to seat the hydraulic fittings. Remove and replace fitting. Properly re-tighten.

BURST HOSE

Normal aging, contact with incompatible materials, separation of layers and over-pressurization are all reasons why a hose may burst. Identify hose, remove and replace, then properly tighten.

CLOGGED HOSE

Introduction of contamination during servicing or system maintenance can create problems. Small pieces of wiping towels, dirt, grit and other foreign matter can collect and obstruct the flow of hydraulic fluid.

1. Disconnect hoses from cylinder.
2. Place hose end into appropriate cylinder.
3. Attempt to flush out contamination by pumping fluid through the hose.
4. If unable to flush out contaminate:
 - A. Disconnect hose from manifold.
 - B. Wearing protective eye protection, blow out contaminants.
 - C. Flush out hose using clean hydraulic fluid
 - D. Check and clean hose fittings of contaminates.
 - E. Reinstall hoses. Service system and bleed air by exercising affected subsystem

PINCHED HOSE

Misrouting of hydraulic lines, creating bends that are too sharp, or hoses caught between two surfaces are causes of pinched hoses. Inspect, and reroute hose if necessary.

INTERNAL LEAKAGE OF CYLINDER

Normal wear of internal O-Rings, cylinder walls, or piston head can, over time, cause slow erratic movement, drifting or complete lack of movement. In addition, contaminants within the system can cause abnormal wear. To check for internal leakage:

1. Position cylinder to the fully retracted position
2. Disconnect hose from the piston head end of cylinder.
3. Place container under open fitting.
4. Depress foot switch - there should be no fluid flow.
5. Remove and replace cylinder if there is evidence of internal leakage.

EXTERNAL LEAKAGE OF CYLINDER

External leakage is evident by excessive fluid around exterior of cylinder, i.e., rod end seal, end caps.

BINDING CYLINDER

Binding cylinders can be checked by disconnecting both hoses from cylinder and slowly moving the affected surface manually. Caution should be used since the cylinder may move suddenly. Place rags over fittings to catch escaping fluid. If unable to move cylinder remove and replace.

INTERNAL LEAKAGE OF PUMP

Internal leakage of hydraulic pump can be checked by disconnecting the output line and depressing the foot switch. If fluid flow is restricted or not evident, replace pump.

EXTERNAL LEAKAGE OF CYLINDER

External leakage is evident by excessive fluid around exterior of pump, i.e., pump piston, check valves, fittings.

PUMP CLOGGED

A clogged pump is verified in the same manner as an internally leaking pump.

FILTER CLOGGED

A clogged filter is checked by:

1. Disconnect hose from input side of filter and check for fluid to this point.
2. If flow is evident, reconnect input hose, disconnect output hose, and check for fluid flow.
3. If fluid flow is restricted or not evident, replace filter assembly.

MANIFOLD CLOGGED

Disconnect line mark "P" on the rear of manifold. Depress foot pedal and check for fluid flow up to this point. If no fluid flows, troubleshoot filter and/or pump.

SELECTOR VALVE INOPERATIVE

To isolate possible problems with a selector valve:

1. Swap lines with a known good cylinder at the manifold.
2. Test for proper actuation of cylinder while cycling selector valve.
3. Remove and replace selector valve if problems persist.

9.0 SERVICE OF HYDRAULIC SYSTEM AND ADJUSTMENTS TO THE TABLE

DESCRIPTION

Servicing of the hydraulic system may be required depending upon table operation performance. The need for servicing may be indicated by uneven or jerky movement of surfaces when extending a cylinder or drifting of surfaces when retracting a cylinder. The hydraulic system should also be serviced whenever it is opened for maintenance.

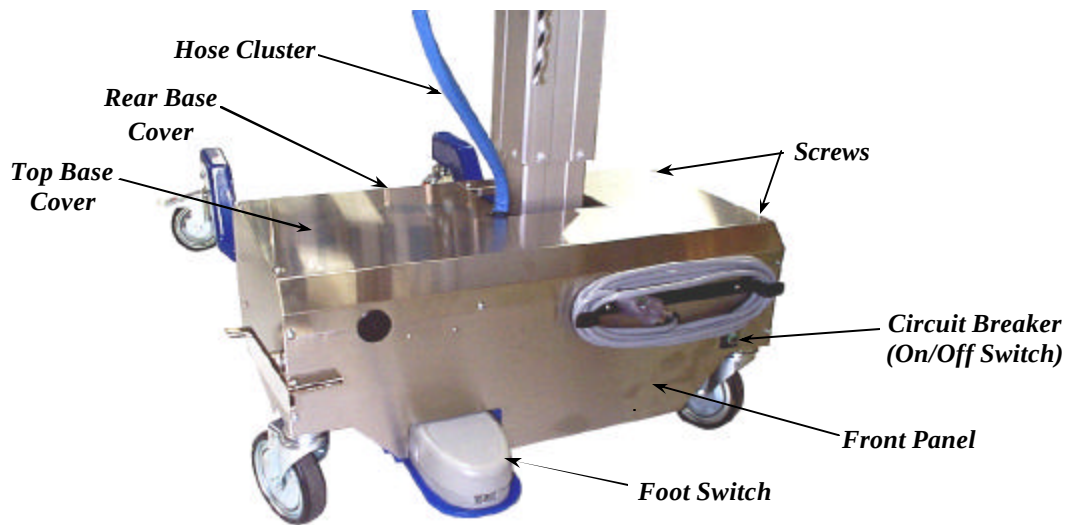


Figure 9

Perform the following steps when servicing of the hydraulic system:

1. Raise table to its fullest height.
2. Cut spot tie around hose cluster at top base cover adjacent to column. To prevent damaging of hose cluster insulation temporarily tie hose cluster to table column at two or more points.
3. Removal of base covers:
 - A. Remove six screws from rear base cover and remove rear base cover. Remove twelve screws from top base cover. Carefully remove top base cover to prevent scratching table height column or damaging hose assembly insulation. Remove two screws from front panel. Remove front panel.
4. Remove filler cap. Check hydraulic fluid level in the reservoir. It should be approximately one and one half inch from the top. Add fluid if necessary and use Chevron AW Hydraulic Oil viscosity 32 or equivalent.
5. Reverse the above procedures for installation of base covers and spot tie hose cluster to top base cover.

Adjustments

Periodically, items on the table may need adjustment due to usage and table performance. These items are as follows:

HEAD END CASTERS

NOTE: The foot end caster-locking feature is not adjustable. If the foot end casters do not lock properly, they must be replaced.

As the head end casters wear, their ability to lock may diminish due to the longer distance the friction lock must travel to fully engage the wheel. The adjustment to compensate for this is as follows:

1. Raise the head end of the table onto blocks of wood. Ensure both head end wheels are high enough off the ground to allow free movement of the wheel and caster assembly.

NOTE: Unplug the power cord from the wall before removing the front cover.

2. Remove the front cover panel to gain access to the caster retaining bolts (See Section III. Servicing of Hydraulic System, Removal of Base Covers).
3. Remove caster-retaining bolts. The break lever shaft will hold the casters in place.
4. Engage wheel lock.
5. Attempt to rotate wheels: slight rotation of the wheel with extreme pressure is acceptable, free rotation of the wheel with little pressure will require caster lock adjustment. If wheel locks do not require adjustment, go to step 7
6. With wheel lock engaged, turn the caster assembly clockwise 180 degrees to increase locking force. Go to step 5.
7. Release wheel lock and insure wheels are free to spin and that caster rotates freely.
8. Re-install caster-retaining bolts using green Loctite TM.
9. Re-install front cover panel and return table to service.

CHECK VALVES

There are six adjustable check valves built into the manifold to ensure proper operation of the hydraulic system. The procedure for adjusting each is as follows:

1. Trendelenberg Check Valve
 - A. The Trendelenberg check valve is on the left, facing the control panel (See figure 10).
 - B. Hold adjustment screw with 5/32" Allen wrench and loosen jam with a 9/16" box end wrench. Apply a load of 240 pounds centered on Tibial Support. Apply a load of 130 pounds centered 12 inches from main pins.
 - C. Hold control valve in Trendelenberg position and carefully increase Trendelenberg (All other control valves must be in the off position).
 - D. Hold control valve in reverse Trendelenberg position.
 - E. Turn in adjustment screw until Trendelenberg begins to fall. Turn out screw to arrest further movement.
 - F. Depress Foot Switch. Check for drifting at this position. If drifting occurs, turn out adjustment screw one quarter of a turn.

- G. Repeat steps D, E, and G until Trendelenberg no longer drifts anywhere in its downward travel.
 - H. Hold adjustment screw in place while tightening jam nut (10 ft-lbs. torque).
 - I. Check for ease of operation in the Trendelenberg and reverse Trendelenberg positions. If either function does not move, the adjustment screw has been turned out too much and the entire procedure must be repeated.
2. Tibial Slider Check Valve
- A. Adjustment to the Tibial Slider is the same as the with the following exceptions:
 - 1) The tibial check valve is on the right, facing the control panel (See figure 10).
 - 2) Control valve positions will be up toward and down toward reverse Trendelenberg.
 - 3) We are checking drift on the Tibial Slider.
 - 4) When the tibial slider reaches its topmost position and the control valve is positioned down, there will be a slight drop of the tibial slider as it aligns itself. This is the only time this happens and it should not drift here or at any other time during its downward travel.
 - B. Perform Steps A – J of adjusting. Check valve, noting exceptions.
3. Foot End and Table Height Check Valve
- A. Cut spot tie on hose assembly. Remove inside cover of control block. Be careful in preventing damage to the hose assembly insulation.
 - B. Adjustment to the Foot End and Table Height are the same as the with the following exceptions:
 - 1) Looking from the left side of control block; the Foot End Check Valve is on the bottom right and the Table Height is on the bottom left nearest you (See figure 10).
 - 2) The Foot End should not be positioned beyond 45” from vertical while adjusting.
 - 3) The 240-pound weight used for the table height adjustment needs to be positioned centered over the table column. The 130-pound weight should be positioned alongside.
 - 4) Perform Steps A – J of adjusting using “up” for and “down” for reverse.
4. Lateral Tilt Check Valve
- A. The check valves for left and right patient tilt are located furthest away while looking at the bottom of the control block from the left. The patient’s left control valve is nearest the faceplate. The patient’s right control valve is furthest from the faceplate (See figure 10).
 - B. Ensure that table height is at its lowest position.
 - C. Loosen jam nut and tighten adjustment screws until they stop. Loosen both screws 1-1/2 turns.
 - D. Position control valve to patient left and depress the Foot Switch. Stop at mid travel and check for drift. Adjust as necessary. Reposition control valve to patient right and repeat. Reinstall inside control block cover. Use blue Loctite on top mounting bolts. Spot tie hose assembly to cover

10.0 REMOVAL AND REPLACEMENT OF COMPONENTS

PADS

1. Tibial Pad
 - A. Raise Foot End to the horizontal position.
 - B. Lower tibial support to the horizontal position
 - C. Remove six 5/32" Allen head bolts. Use caution to prevent loss of washers on bolts on the hinge end of the tibial support.
 - D. Reverse procedures to install. Ensure washers are in the proper position. **Do not over tighten bolts.** The anchor nuts inside the pad assembly can pull loose.
2. Femoral Pad
 - A. Position Table for tibial pad removal
 - B. Remove four 5/32" Allen head bolts.
 - C. Reverse procedure to install.
3. Right and Left Torso Pads
 - A. Position Autoglide Torso Lift toward the Head End to gain access to Foot End bolts.
 - B. Remove Foot End bolts using a 7/16" x 3/8" drive deep well socket wrench with extension.
 - C. Reposition Autoglide Torso Lift towards the foot end to gain access to head end bolts.
 - D. Insert socket/extension through access holes in tabletop cover (right side).

NOTE: The bolt above the valve block (left side) is accessible by using the 7/16" deep well socket without the extension.
 - E. Pads can now be lifted off and removed.
 - F. Reverse procedures to install.

CYLINDER REPLACEMENTS

1. Torso Lift
 - A. Fully retract Torso Lift Cylinder.
 - B. Remove chest pad and Velcro strip from chest board assembly.
 - C. Disconnect and plug hydraulic lines.
 - D. Remove 7/32" Allen head screws from chest board mounting plate.
 - E. Remove chest board assembly.
 - F. Remove four 7/64" Allen head screws from bearing assembly and remove bearing assembly.
 - G. Remove four 1/8" Allen head screws from cylinder and remove cylinder.
 - H. Reverse procedure to install. Apply blue LoctiteTM to all bolt threads prior to installation.
 - I. Extend and retract Torso Lift Cylinder a minimum of five times to bleed air from cylinder.
 - J. Check and service hydraulic fluid level.

2. Tibial Slider

- A. Fully retract Tibial Slider Cylinder.
- B. Position foot end in the horizontal position.
- C. Remove Femoral Pad Assembly.
- D. Disconnect and plug hydraulic lines.
- E. Remove two 3/16" Allen head bolts from bottom of cylinder.
- F. Remove two 1/8" Allen head bolts from one side of rod end clevis mount.
- G. Remove clevis pin and cylinder pad assembly. **Do not over tighten bolts** to femoral pad assembly.
- H. Reverse procedure to install. Apply blue LoctiteTM to all bolts except those to femoral pad assembly.
- I. Extend and retract tibial slider cylinder a minimum of five times to bleed air from cylinder.
- J. Check and service hydraulic fluid level.

3. Foot End

- A. Fully retract foot end cylinder.
- B. Remove four #2 Phillips head sheet metal screws from forward inside cover and remove cover.
- C. Wrap rags around cylinder rod to prevent damage to rod.
- D. Remove the two sheet metal screws from inside manifold cover.
- E. Remove two sheet metal screws from right side of manifold faceplate.
- F. Remove snap ring from rod end, web pin.
- G. Supporting foot end cover, remove two 1/8" Allen head bolts from foot end cover.
- H. Supporting cylinder rod, remove web pin. Disengage cylinder rod from foot end assembly.
- I. Carefully work foot end cover over cylinder rod and remove.
- J. Tie rod end to table for support during step K and L.
- K. Cut spot ties, disconnect and plug hydraulic lines.
- L. Remove snap ring from piston end mounting pin with a straight slot screwdriver.
- M. Untie rod end. Remove pin and cylinder.
- N. Reverse procedure to install. Check routing of retract line to ensure it is not pinched by Trendelenberg cylinder during actuation of either cylinder. Apply blue LoctiteTM to Allen head bolts.
- O. Extend and retract cylinder a minimum of ten cycles to bleed air from cylinder. Check and service hydraulic fluid level.

4. Trendelenberg

- A. The procedures for removing and replacing the Trendelenberg cylinder is the same as for the foot end cylinder with the following exceptions:
 - 1) Utilize caution upon removal of rod end web pin as the foot end will drop down hard and suddenly. Support foot end with wooden blocks.
 - 2) Piston end is mounted to a ¼” long shoulder socket head bolt. Use a 7/16” and 13/16” combination wrench to loosen and reposition banjo fitting prior to removing this bolt.
 - 3) Apply a thin coat of grease to the shoulder and blue Loctite™ to the threads before reinstalling bolt.
 - 4) Position the extension hose so that fitting does not rub against bolt head.

5. Lateral Tilt

- A. Remove base covers as per hydraulic fluid servicing.
- B. Retract piston (patient left) fully.
- C. Disconnect and plug hydraulic lines.
- D. Remove snap ring and mounting pins from both ends of cylinder. Remove cylinder.
- E. Reverse procedure to install. Extend and retract cylinder a minimum of five times to bleed air from cylinder.
- F. Check and service hydraulic fluid level.

6. Table Height

- A. Call for service if table height cylinder needs to be replaced.

CHECK VALVES

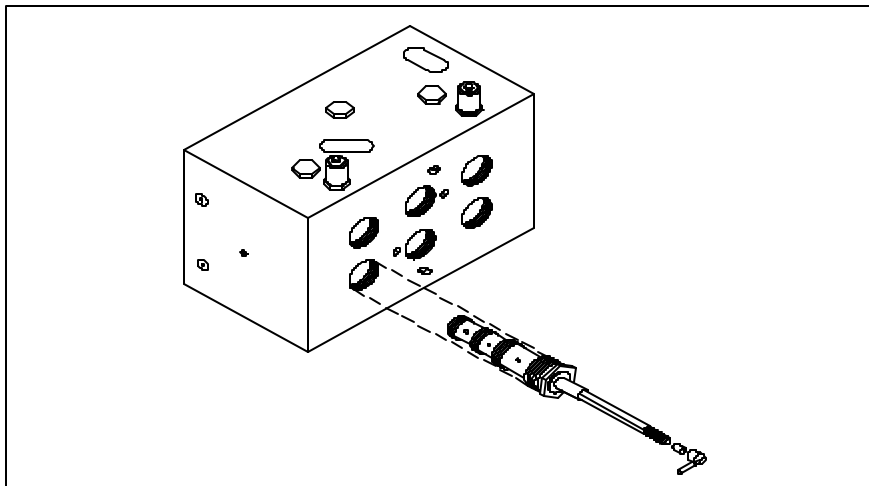
The procedure for check valve replacement is the same for all check valves. Facing the control panel the location of the individual check valves are: (See Figure 1)

- 1) Trendelenberg – Top Left
 - 2) Tibial – Top Right
 - 3) Foot End – Bottom Left Forward
 - 4) Table Height – Bottom Left Rear
 - 5) Patient Left – Bottom Right Forward
 - 6) Patient Right – Bottom Right Rear
- A. Fully retract all cylinders.
 - B. Remove foot end cover in accordance with removal procedure and replacement guidelines.
 - C. Remove defective check valve with 7/8” combination wrench.
 - D. Lubricate O-Ring of new valve with hydraulic fluid and install. **Do not over tighten.**
 - E. Bleed air from system by extending and retracting all cylinders a minimum of five times.
 - F. Apply blue Loctite™ to Allen head bolt when reinstalling cover.

SELECTOR VALVES

1. Place all cylinders in their fully retracted positions.
2. Using a 5/64" ball end Allen wrench remove set screws from control handles. Be careful not to scratch the faceplate. Remove handles.
3. Remove four sheet metal screws from faceplate and remove.
4. Using a 7/64" ball end Allen wrench, remove screws securing the Return to Center (RTC) arms to valve stems. Be careful when removing RTC arms as the arms have spring tension applied to them. Slide the RTC arms away from valve stems and remove RTC arms.
5. Using a 5/64" Allen wrench, remove the two screws attaching the RTC assembly to the valve block. Remove RTC assembly.
6. Remove old valve with a one-inch combination wrench.
7. Lubricate new selector valve O-Ring with hydraulic fluid and install. Do not over tighten.
8. Turn selector valve stem fully counter clockwise.
9. Apply green LoctiteTM to threads on valve stem and valve stem sleeve.
10. With the counter-bored end of the sleeve facing the manifold, screws the sleeve on the stem until the stem is just below or flush with the face of the sleeve.
11. Orient the sleeve so that the holes are at 45 degrees.
12. Reinstall the RTC Assembly and install the two mounting screws.
13. Reinstall the RTC arms. Slide RTC arms down between the RTC springs and onto valve stems. Apply blue LoctiteTM to the RTC arm attaching screws. Install screws and tighten.
14. Reinstall the faceplate
15. Apply blue LoctiteTM to the setscrews and install into handles.
16. Install handles and setscrews through the valve stem sleeve holes. Ensure that the setscrews are seated through the holes and not sitting on the sleeve. Check that the detent on the selector valve handle is sitting in the top hole.
17. Reinstall sheet metal screws into faceplate.

Allow two hours for LoctiteTM to set prior to returning table to service.



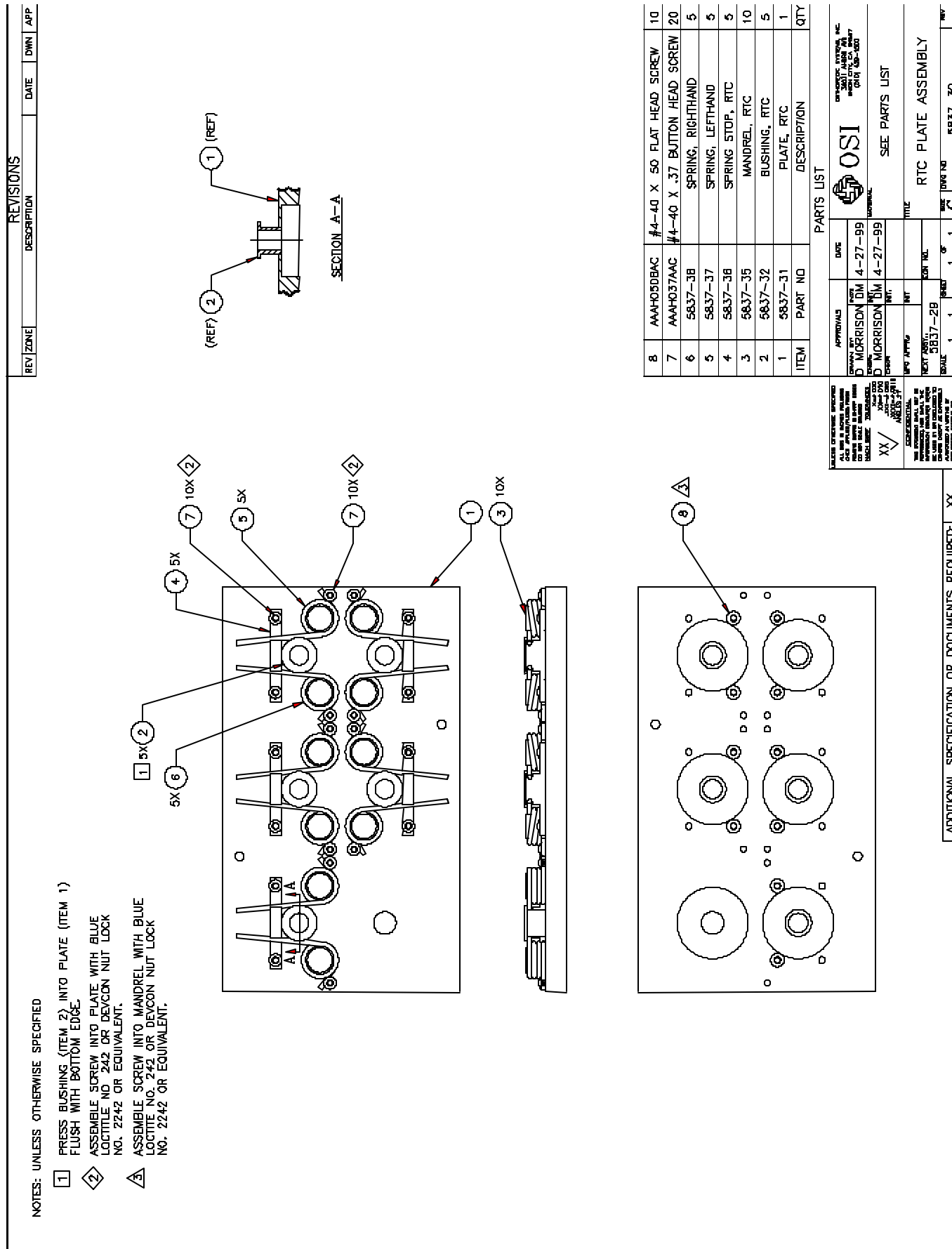


Figure 13

MOTOR/PUMP

NOTE: Unplug the power cord from the wall before removing base cover.

1. Remove base cover (see Section III. Servicing of Hydraulic System, Removal of Base Covers).
2. Disconnect and plug the pump output line at pump with a 1/2" and 9/16" combination wrench and plug the line (fluid will leak out).
3. Disconnect and plug the pump inlet line at pump with a 5/8" and 11/16" combination wrench.
4. Disconnect electrical wires from motor/pump to circuit breaker, capacitor (see Electrical System Schematic).
5. Remove four 7/16" nuts, flat washers, and lock washers attaching motor/pump to pump mount.
6. Remove motor/pump.
7. Remove inlet and outlet fittings from old motor/pump and install on new motor/pump. Do not over tighten.
8. Position new motor/pump in place and attach to pump mount.
9. Connect electrical wires from new motor/pump to circuit breaker, capacitor (see Electrical System Schematic).
10. Reconnect pump outlet and inlet lines using thread sealant tape.
11. Plug power cord into wall and fully extend and retract all cylinders a minimum of five times to bleed air from system.
12. Unplug power cord from wall and check all fittings for leaks.
13. Check and service the hydraulic fluid level, fluid level should be between 1/2" and 1" from top of reservoir.
14. Reinstall base cover panel and return table to service.

FOOT SWITCH

NOTE: Unplug the power cord from the wall before removing base cover.

1. Remove base cover (see Section III. Servicing of Hydraulic System, Removal Base Covers).
2. Remove front cover by removing the two attachment screws.
3. Remove the two screws on the sides of the foot switch and remove foot switch cover. Be careful not to lose the cover return spring.
4. Remove four screws holding the well cover to the foot switch to gain access to the electrical connections.
5. Disconnect the wires attaching the circuit breaker and relay to the foot switch.
6. Remove foot switch from the mounting plate by removing the three attachment screws.
7. Install new foot switch to mounting plate.
8. Attach electrical connections from the circuit breaker and relay to the new foot switch (see Electrical Schematic).
9. Install well cover on new foot switch.

10. Install cover return spring and foot switch cover.
11. Reinstall front cover panel.
12. Plug in power cord and check for proper operation of the new foot switch.
13. Unplug power cord from wall and reinstall base cover panel.
14. Return table to service

CIRCUIT BREAKER (ON/OFF SWITCH)

NOTE: Unplug the power cord from the wall before removing base cover.

1. Remove base cover (see Section III. Servicing of Hydraulic System, Removal of Base Covers).
2. Press ears on the top, bottom of the backside of circuit breaker together, and push the circuit breaker forward through the front panel.
3. Disconnect electrical wires from the power cord, motor/pump, and foot switch to the back of circuit breaker and remove circuit breaker.
4. Connect electrical wires from the power cord, motor/pump, and foot switch to the new circuit breaker (see Electrical System Schematic).
5. Insert the circuit breaker into mounting hole in front cover and firmly press the circuit breaker back into the hole. The circuit breaker should snap into place securely.
6. Plug in power cord and check for proper operation of the circuit breaker.
7. Unplug power cord from wall and reinstall base cover panel.
8. Return table to service.

WHEELS

1. To change wheels on any or all of the casters
 - A. Raise table on blocks of wood.
 - B. Remove axle bolt with two ½” wrenches.
 - C. Remove old wheel.
 - D. Install new wheel being careful not to drop bearings.
 - E. Apply green LoctiteTM to axle bolt threads and install.

CASTERS

1. Head End
 - A. Raise table on blocks of wood.
- NOTE: Unplug the power cord from the wall before removing the front cover.***
- B. Remove base cover and front panel (See Section III. Servicing of Hydraulic System, Removal of Base Covers).
 - C. Drive out spring pin from brake control shaft.
 - D. Remove brake control shaft and washers.
 - E. Remove caster attachment bolt.
 - F. Remove old caster.

- G. Lock new caster and install so that it will unlock going counterclockwise from the lock position.
 - H. Install brake shaft through right and left casters. Brake lever pedal should be parallel to the base top and shaft cut out should face forward.
 - I. Check that shaft does not rub or bind on any wiring or components in any of the three caster positions. Adjust shaft as necessary.
 - J. Install shaft washers and spring pin.
 - K. Adjust caster locking per Section V. Adjustments.
 - L. Re-install caster attachment bolt using green Loctite™.
 - M. Install base covers and return table to service.
2. Foot End
- A. Raise table on blocks of wood.
 - B. Remove caster attachment bolt.
 - C. Remove caster.
 - D. Install new caster.
 - E. Re-install castor attachment bolt using green Loctite™.
 - F. Return Table to service.

AUTOGLIDE TORSO LIFT ASSEMBLY

- 1. Disconnect and cap hydraulic lines leading to Torso Lift Cylinder.
 - 2. Loosen bottom bolt at each of the four mounting brackets.
 - 3. Remove top bolt at each mounting bracket.
 - 4. Removal of Torso Lift Assembly will **require two people**. Hold right and left pads to prevent them from sliding. Lift assembly with arm rails carefully to prevent damage to assembly, sheet metal cover or table coating.
 - 5. Remove six screws from sheet metal cover and remove-cover.
 - 6. Assure the tabletop is flat and level.
 - A. Replace sheet metal cover and Autoglide Torso Lift Assembly. Apply blue Loctite™ to mounting bolts and snug down. Check clearances of slider assembly to side rail and sheet metal cover screws through full range of travel. Adjust by repositioning mounts. Reconnect hydraulic lines to chest lift cylinder. Position the hydraulic lines so that they do not catch on cassette tray mount or bind.
- 1) Installation of Autoglide Torso Lift Assembly:
- a) Replace sheet metal cover and Autoglide Torso Lift Assembly.
 - b) Apply blue Loctite™ to four mounting bolts and loosely install.
 - c) Check clearances of slider assembly to side rail and cover screws through its full range.
 - d) Adjust for proper clearance and snug down mounting bolts.
 - e) Reconnect hydraulic line to chest lift cylinder. Route lines so they do not catch on cassette tray mount or bind on cover

11.0 TECHNICAL DRAWINGS AND PARTS LISTS

ITEM	PART NO.	DESCRIPTION	QTY
1	5838-2	BASE ASSEMBLY (230~VAC)	1
2	5837-2	BASE ASSEMBLY (120~VAC)	1
3	5820-2	TABLE ASSEMBLY	1
4	5820-3	FOOT END ASSEMBLY	1
5	5837-3	TORSO LIFT ASSEMBLY	1
6	5820-7	SEAT POST ASSEMBLY	1
9	5820-8	SEAT ASSEMBLY	1
10	5820-12	HEEL CLAMP ASSEMBLY, RIGHT	1
11	5820-13	HEEL CLAMP ASSEMBLY, LEFT	1
13	5820-18	ARM BOARD ASSEMBLY	2
14	5820-225	HOSE COVER	1
16	5820-265	CASTER PEDAL ASSEMBLY, WELDED	1
17	5820-301	TOP COVER, BASE	1
18	5820-302	TOP COVER, RIGHT SIDE	1
19	5820-305	BOTTOM COVER, BASE	1
20	5820-306	BOTTOM COVER, RIGHT	1
21	5820-311	TABLE COVER	1
22	5837-25	FACE PLATE	1
23	5820-342	DROP HANDLE ASSEMBLY	1
24	5820-356	VALVE KNOB ASSEMBLY	1
26	5820-357	LOCK KNOB ASSEMBLY	1
27	5820-473	FILLER CAP	1
28	5820-495	FRONT CASTER	2
29	5820-496	REAR CASTER	2
30	5820-533	MAIN PIN	2
31	5820-607	HIP SUPPORT PAD	2
32	5820-610	HIP SLING	1
33	5820-620	ILIAC BOLSTER SLING	2
34	5820-621	ILIAC BOLSTER PAD	2
35	5820-640	TORSO LEFT PAD	1
36	5820-655	COVER (NOT SHOWN)	1
37	5820-660	THIGH PAD ASSEMBLY	1
38	5820-670	TIBIAL PAD ASSEMBLY	1
39	5320-87	DROP HANDLE ASSEMBLY	2
40	5810-1	PATIENT CARE KIT (NOT SHOWN)	1
41	5837-21	PLUG, FRONT COVER PANEL	1
42	5837-15	MOUNTING PLATE, FOOT SWITCH	1
43	NV0440	FOOT SWITCH	1
44	5840-293	CORD BRACKET	1
45	NV0906	CIRCUIT BREAKER (230~VAC, 3AMP)	1
46	NV0311	CIRCUIT BREAKER (120~VAC, 10AMP)	1
47	5837-22	ELEC. CORD ASSEMBLY (120~VAC)	1
48	5838-22	ELEC. CORD ASSEMBLY (230~VAC)	1
49	5837-26	VALVE KNOB ASSEMBLY	5
50	5837-16	FRONT COVER PANEL	1

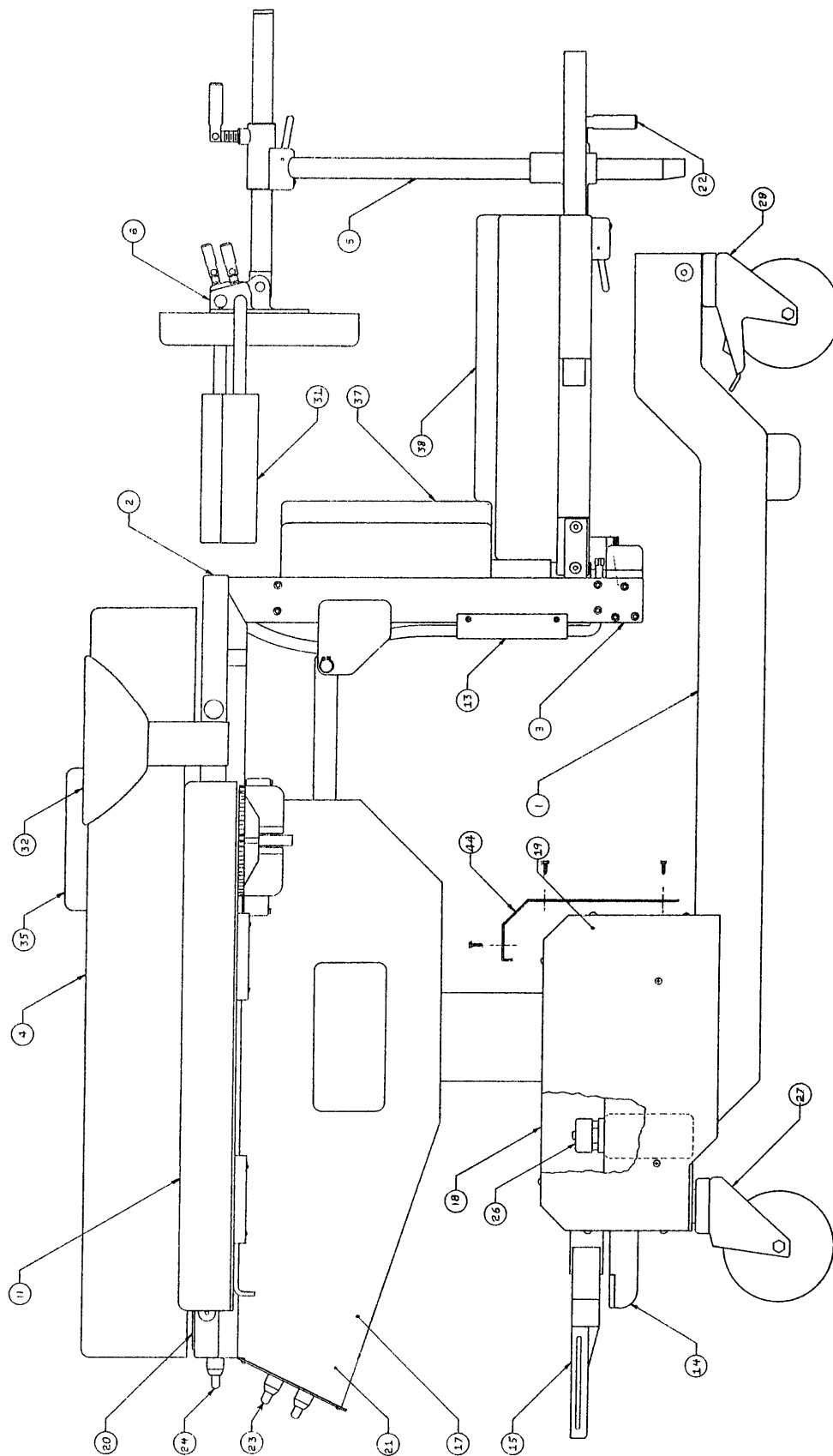


Figure 14

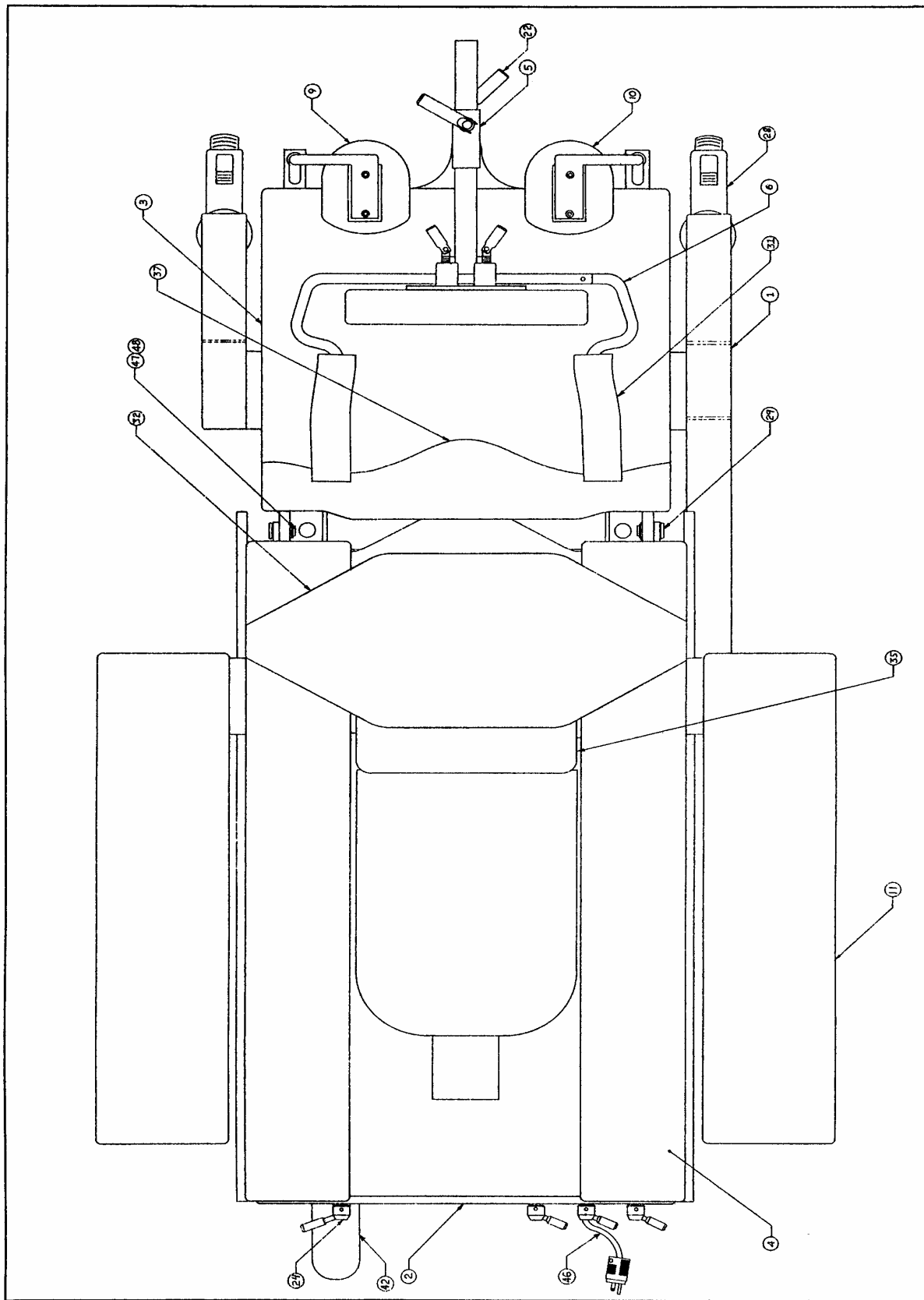


Figure 15

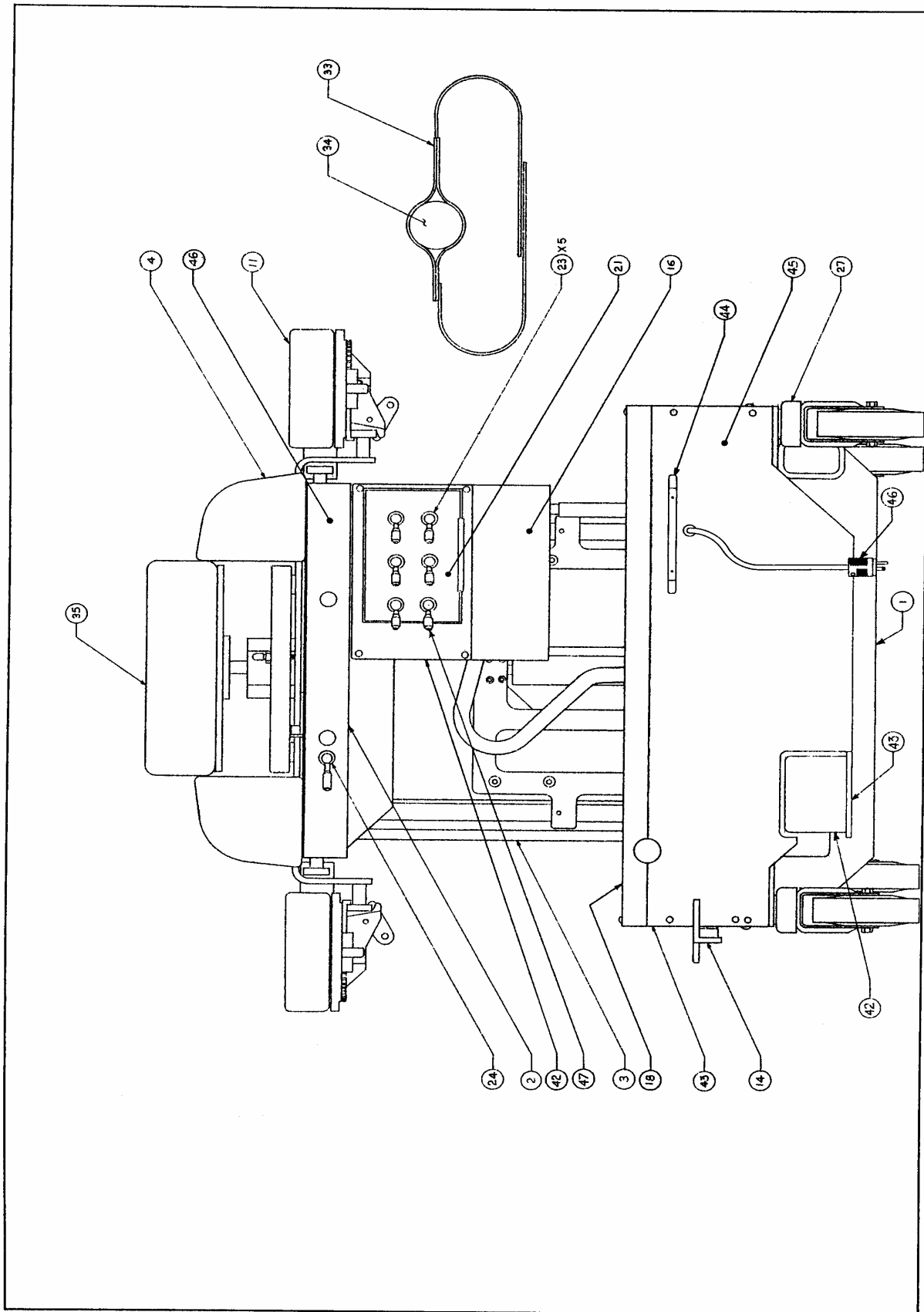


Figure 16

DATE 10-27-89	REV. NO. A	DESCRIPTION NAS 5820-34, LOCK ASSY.	APPROV. N
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7	NEOS15	COMPRESSION SPRING	1
6	AFQ18100	$\frac{1}{8}$ DIA. X 1.00 SPRING PIN	1
5	5820-341	SEAT POST ASSY., WELDED	1
4	5820-342	DROP HANDLE ASSY.	1
3	5820-285	LEVER ASSY., WELDED	1
2	5820-557	PIN	1
1	5820-556	DETENT	1
ITEM NO.	PART NO.	DESCRIPTION	QTY REQD.

PART LIST

 ORTHO-MEDIC SYSTEMS, INC. 1897 NATIONAL AVE., RICHMOND, CA 94804 (415) 786-1020	
SCALE 1 = 1	APPROVED BY [Signature]
DATE 9-12-89	DRAWN BY J. R. Z.

NEXT ASSY. 5820	SEAT POST ASSY.	DRAWING NUMBER 5820-7
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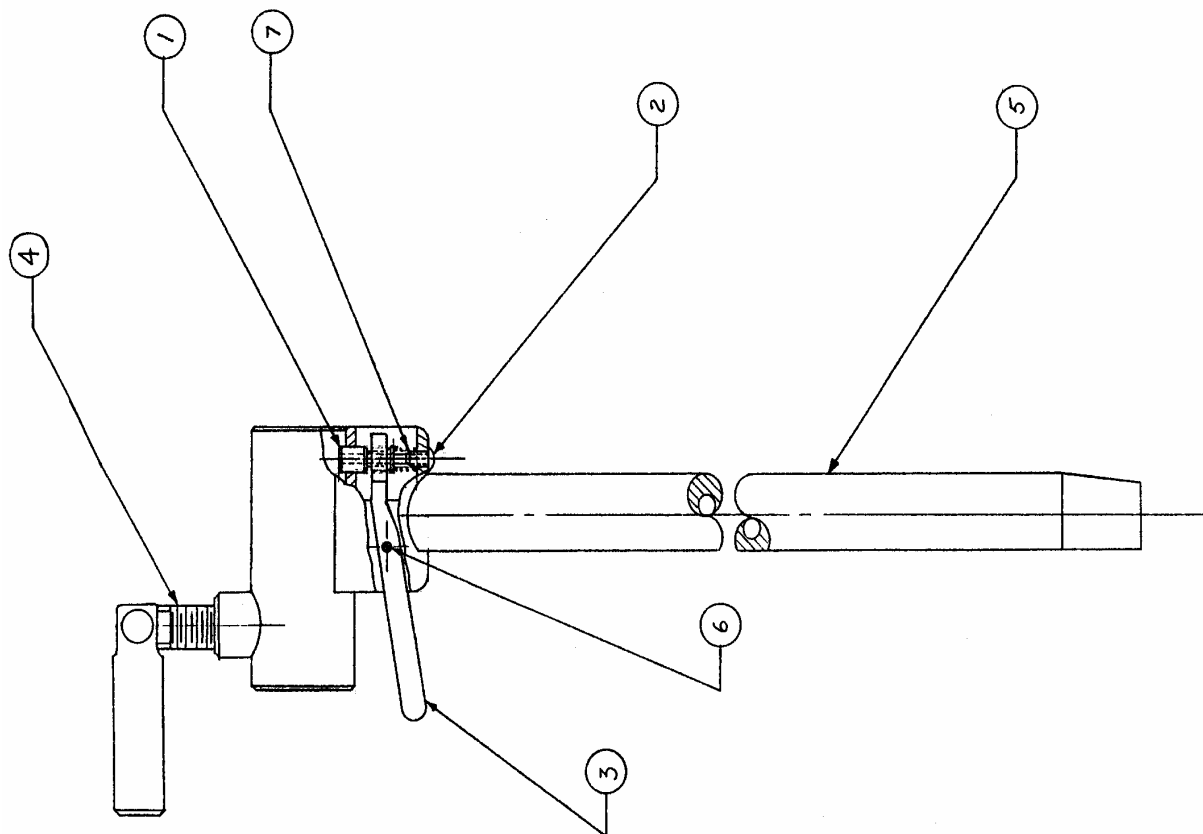


Figure 17

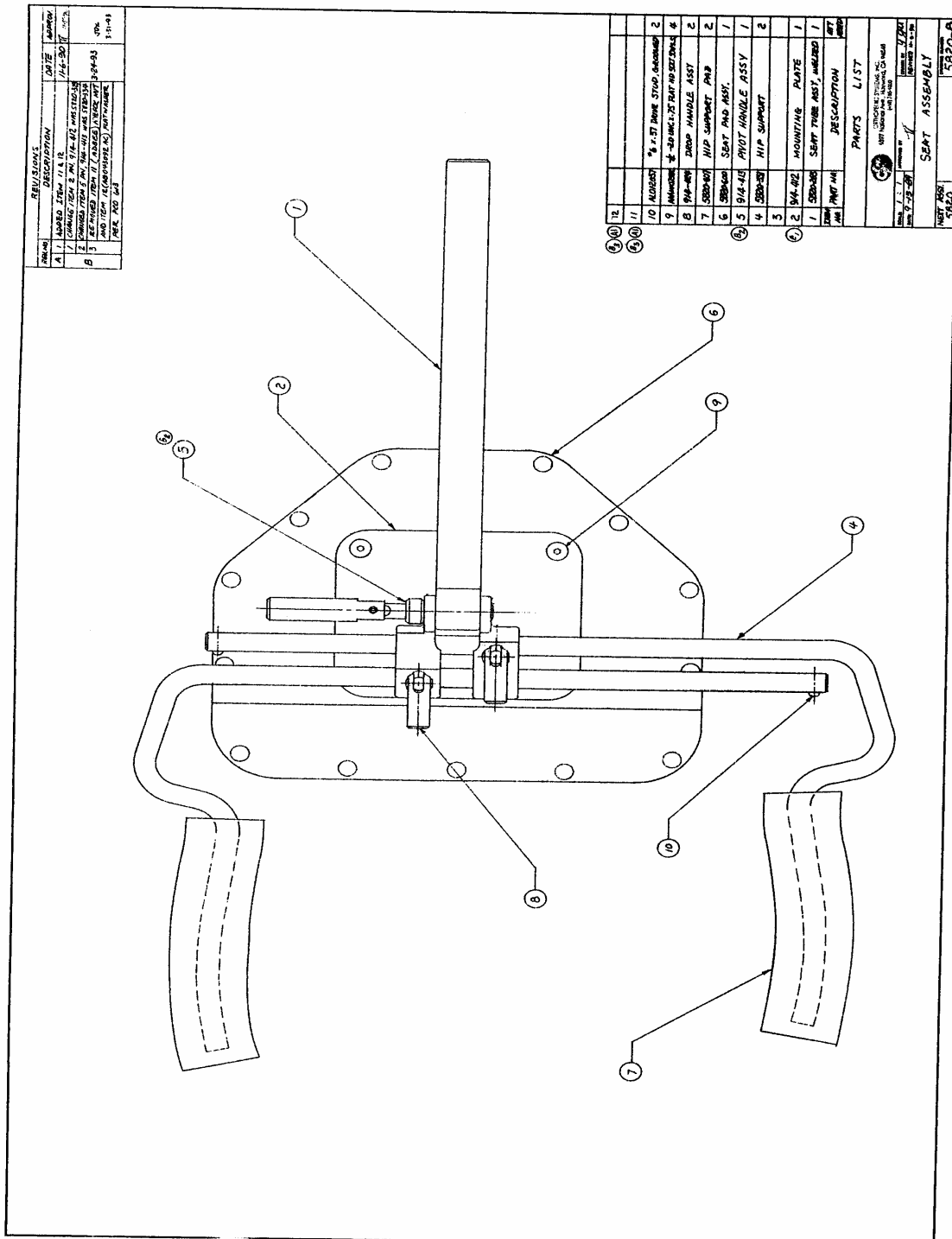


Figure 18

12.0 GLOSSARY OF TERMS

Basic assumptions of Patient Orientation on the tabletop:

Our glossary of terms and technical procedures assume the patient is oriented with their head at the “front or head-end of table” and their feet at the “rear or foot-end of table”. The control functions are oriented for this position only.

“Front of table” indicates the end of the table where the power cord, "On-Off" switch, and Control Panel are located; otherwise referred to as the “head end”.

“Hospital Grade” outlet refers to a 120VAC outlet properly wired with earth ground: Neutral to Common = 120VAC; Neutral to Ground = 120VAC; Common to Ground less than zero point five (0.5) VAC.

13.0 OSI TECHNICAL SERVICE

13.1 Contact for Parts and Service

For detailed repair information or to order replacement parts, call the OSI Technical Services Department: **1-800-777-4674**

A Technical Services line is available from 7AM-5PM PST, Monday through Friday. Please leave a message after business hours.

Please state *slowly* your name, phone number, your facility name and city, and affected equipment model number.

An e-mail message may be left anytime at techsvcs@osisosi.com or through the Technical Service icon in our web site: www.osiososi.com.

13.2 Ordering Replacement Parts (RP)

1. If unable to identify part - telephone, fax or E-mail to Technical Service.
2. If part is known - telephone, fax or E-mail part number and description to Customer Service for price and availability.
3. To place Replacement Parts (RP) order - telephone, fax or E-mail part number, description, price, customer number and method of shipment to Customer Service with purchase order. Indicate that order is for Replacement Parts (RP).

13.3 Returning Damaged Parts (RGA)

1. Identify parts to be returned.
2. Telephone, fax or E-mail part number and description of parts for return to Customer Service for Return Goods Authorization (RGA) number.
3. Return ship parts with RGA number clearly marked on outside of package.
4. Complete Certificate of Disinfected Parts Document #40204-17.

13.4 Requesting Repair (RA)

1. If unable to identify part - call, fax or E-mail to Technical Service.
2. If part is known - telephone, fax or E-mail part number and description to Technical Service for Repair Authorization (RA) number.
3. Clean (disinfect) parts prior to shipping; complete Certificate of Disinfected Parts Document #40204-17.
4. Ship part with RA number clearly marked on outside of package.
5. Part will be evaluated and customer will be contacted with the cost of repair.
6. After customer approval of repair cost, part will be repaired and return shipped to customer.